at1118paper: Complete the Square (v409)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 40x \;=\; -364$$

Add $\left(\frac{-40}{2}\right)^2$, which equals 400, to both sides of the equation.

$$x^2 - 40x + 400 \;=\; 36$$

Factor the left side.

$$(x - 20)^2 \;=\; 36$$

Undo the squaring. We need to consider both $\pm\sqrt{36}$.

$x - 20 = -6$	or	$x - 20 = 6$
$x = -26$	or	$x = -14$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 22x \;=\; 840$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 8x \;=\; 128$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 + 36x = 1701$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 56x = -208$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 48x = -572$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 28x = 288$$